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A Clinical Profile of Diabetic Foot Patients at Tertiary Health Care Institute, Nashik

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Abstract

Introduction: One of the most dreaded complications of diabetes mellitus is the diabetic foot syndrome. It can cause prolonged morbidity and possibly loss of a limb, apart from high medical expenses. It often is caused due to an easily correctable factor, or lack of simple preventative measures in a vulnerable patient. **Aims:** To study the clinical profile of diabetic foot patients, and associated risk factors. **Method:** A descriptive study, including diabetic foot patients admitted in surgery department at tertiary health care centre was carried out over a period of 2 years. **Results:** Majority of patients were males. Highest number of patients was in 61-70 years age group (41.66%). Use of tobacco (52.78%) and trauma were common causative factor. **Conclusion:** Diabetic foot is common in elderly male diabetics, tobacco users, with peripheral neuropathy, often caused due to minor trauma which patient ignores. Patient education and early intervention can reduce incidence and morbidity of this condition.

Keywords: Diabetic Foot, Risk Factors, Ulcer

1. Introduction

Diabetes mellitus can be defined as a metabolic disorder of multiple aetiologies characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action, or both[1]

The diabetic foot syndrome encompasses an array of foot abnormalities, resulting from peripheral neuropathy, micro and macro angiopathy and other consequences of metabolic disturbances.

Foot problems in persons with diabetes have been recognized as a major health issue the world over. The diabetic foot with gangrene was one of the leading causes of death from diabetes, second only to diabetic coma[2].

Approximately 15% of persons with diabetes will have an ulcer in their lifetime[3], and 0.5% to 29.0% will have neuropathic joint changes[4]. Ulcer prevalence in persons younger than 44 years was 6.5 per 1,000 diabetic patients, and it rose progressively to 10.3 per 1,000 diabetic patients in individuals older than 75 years[5].

Diabetes is the leading cause of non-traumatic amputations, amounting to 57,000 per year or 150 per day. One half to 80% of all amputations are diabetes-related[6–8]. Hospitalizations for lower-extremity amputations rose from 33,000 in 1980 to 71,000 in 2005; however, average length of stay fell from 35.3 days to 10.7 days during the same period[9].

In India, diabetic foot infection is a common cause for hospital admission among diabetic patients and is caused by a number of socio-cultural practices[10]. The economic and emotional consequences for the patient and the family can be enormous[11].

There exists a difference in the prevalence rate of diabetic foot in urban and rural India. A study done by Viswanathan V et al. in Chennai showed prevalence of foot infection was higher among rural than urban patients (26% vs. 34%). Amputation rates were also higher among

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rural than urban patients (3% vs. 8%). The reason for the high prevalence of foot infection could be attributed to greater prevalence of barefoot walking (11% vs. 15% for urban and rural, respectively), lesser use of customized footwear (61% vs. 49% for urban and rural, respectively), and increased prevalence of smoking (2% vs. 6% for urban and rural)[12]. Also, individuals in rural areas often sleep in huts or farmhouses where rodents are common; rodent bites to the feet of the patients with diabetes can lead to chronic ulcers[10].

The cost of foot disease is astounding. Medicare records show that $1.5 billion was spent directly on diabetic foot ulcers from 1995 to 1996[13]. Almost three fourths of this was spent during inpatient treatment alone. Today, the annual cost of diabetic foot ulcer care is $5 billion in direct cost and $400 million in indirect cost[14].

2. Aims and Objectives

To study the clinical profile of patients with diabetic foot, in order to identify the vulnerable age group and associated risk factors.

3. Material and Methods

This descriptive study was conducted over a period of 2 years, from December 2009 to December 2011, at Surgery department of Dr. Vasantrao Pawar Medical College, Nashik. Patients with type 1 or type 2 diabetes mellitus with ulcers over the leg and foot were considered eligible for the study. Exclusion criteria were patients with ulcers due to other pathologies such as trauma, chronic venous insufficiency and arteriopathies, and patients with concomitant major illness. Patients were informed regarding the nature of data to be collected, and gave their consent prior to enrolment in the study. 36 patients were studied by universal random sampling method. Data was collected in a prestuctured proforma.

4. Results

Out of 36 patients, 29 (80.56%) were males and 7(19.44%) were females. (Table 1) The mean age of the patients in the total study was 63.4 years. There were 31 (86.11%) patients who were above 50 years of age, and 19 (52%) patients were in the 61-70 years age group. (Table 2)

The Institute where the study was conducted received most of its patients from rural areas. This was reflected in the distribution of occupation, with the most common being farming. Amongst the females, majority were housewives. Some of the patients had retired, so their ex-profession was considered. Most of the patients belonged to the lower socio-economic strata. (Table 3)

Chewing tobacco, in the form of misri, gutkha or paan, was found to be the most common addiction. (Table 4)

The mean duration since the diagnosis of diabetes was 6.68 years. The patients were on oral hypoglycaemic agents or injectable insulin as prescribed by the physician. The mean duration since onset of ulceration was 8.74 months. Peripheral neuropathy was present in 21 patients. A significant number of patients had difficulty in walking.

The majority of ulcers in the study had an insidious onset. The other factors which lead to ulceration are summarized. (Table 5)

At the end of 10 weeks, 7 patients had ulcers which had not healed. The remaining 29 patients underwent skin grafting, amputation, or had complete healing of the ulcer.

Table 1. Sex Distribution

SEX	NO. OF PTS.	% DISTRIBUTION
Male	29	80.56
Female	7	19.44
Total	36	100

Table 2. Age Distribution

AGE GROUP	MALE	FEMALE	TOTAL
31-40	1	-	1
41-50	3	1	4
51-60	6	1	7
61-70	15	4	19
71-80	3	-	3
81-90	1	1	2

Table 3. Occupational Profile of Patients

Occupation	n=36	Male	Female	% Distribution
Farmer	23	21	2	63.89
Manual Labourer	4	4	0	11.11
Carpenter	1	1	0	2.78
Electrician	1	1	0	2.78
Policeman	1	1	0	2.78
Teacher	1	1	0	2.78
Housewife	5	0	5	13.89

Table 4. Risk Factors

RISK FACTORS	NO. OF CASES	% OF CASES
Chewing Tobacco	19	52.78
Smoking	12	33.33
Alcohol	10	27.78
Peripheral Neuropathy	21	58.33
Impaired Gait	24	66.67

Table 5. Cause of Onset

CAUSE OF ONSET	NO. OF CASES	% DISTRIBUTION
Insidious	18	50
Trauma	5	13.89
Shoe Bite	5	13.89
Thorn Prick	4	11.11
Trimming Nails	1	2.78
Burns	2	5.56
Insect Bite	1	2.78

5. Discussion

Amongst the myriad complications of diabetes mellitus, foot problems commonly bring the diabetic to the doctor. In order to treat these effectively, the doctor must first have a proper understanding of diabetes itself and the principles of its management, and then knowledge about the factors leading to development of diabetic foot, and its subsequent treatment and prevention. This purpose of this study was to identify the most vulnerable sections of the population, and to determine the commonly associated risk factors.

A majority of patients were male. Gender differences between men and women in the development of diabetic foot problems have been observed in other studies. Lavery et al. reported that males were a significant risk factor in their study of 225 diabetics[15]. Young et al found that the risk of amputation in women was 69% lower than that of diabetic men[16].

The majority of patients belonged to the 61-70 years age group. In total, 86.1% of the patients were above 50 years of age. Use of tobacco in either chewable or smoked form increases the risk of developing foot ulceration, as seen in the study. Alcohol had a questionable effect on the risk. Though many of the ulcers had an insidious onset, trauma was an important causative factor. Most of the patients were farmers who are more susceptible to foot trauma. Poor footwear, an easily correctable problem, was also found to be the cause of ulceration. Peripheral neuropathy, an important aetiological factor of diabetic foot, was found in a large number of patients. It was usually present in patients with a long history of diabetes.

The above data suggests that the diabetic patient population with the highest risk profile foot ulceration is the elderly male above 60 years of age. Factors which can potentiate ulceration are use of tobacco in any form, the presence of peripheral neuropathy, and trauma. Due to the presence of neuropathy, these patients often do not notice trauma, which can produce a wound which does not heal. Most of the ulcers in the study were long-standing. All these factors highlight that identification of high-risk populations is essential, so that appropriate preventative measures can be taken to reduce incidence of ulceration. And in case of ulceration, early aggressive intervention can prevent long periods of morbidity. Many patients delayed seeking treatment for the wounds due to ignorance of the severity of the condition. Education and awareness within the general diabetic population are important aspects in the overall management of this condition, as they can make the patient aware of the potential risk of developing this condition, and seek timely medical treatment.

6. Conclusion

Foot ulceration is a common complication of diabetes, and the highest incidence is seen in males, in the 60-70 years age group. Occupations in which injury to the feet is common increase the risk, and this is potentiated in the presence of peripheral neuropathy. Use of tobacco, either chewed or smoked, also increases risk. Preventative measures and timely intervention can obviate prolonged morbidity and possible amputation, and patient education is an important aspect in the management of this condition.

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